

TEACHING & LEARNING VIA CHATBOTS WITH IMMERSIVE AND MACHINE LEARNING CAPABILITIES

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ABSTRACT

Chatbot is a computer program that simulates human conversation through voice commands or text chats or both. Chatbots are designed to convincingly simulate how a human would behave as a conversational partner. Chatbots with artificial intelligence technology can be used to teach the students by turning a lecture in a series of messages to make it look like a standardized chat conversation. The paper describes the development of intelligent chatbots that had been built for Java programming course. Most of the learning courseware/systems to learn Java programming language are merely repository of static and monotonous contents such as hyperlinked online tutorials, video lectures, etc. In order to address these shortcomings, seven text-based conversational chatbots for the students to learn Java in an interactive and engaging manners had been built. Each of these chatbots focuses on different programming concepts or constructs. These chatbots support learning of Java via problem-solving steps through “learning by doing”. The unique features of these chatbots are (i) The chatbots are self-contained, interconnected and are able to initiate a learning process for a particular learning outcomes and provide feedback to a student as they are working through problems; (ii) These chatbots are able to engage the learners’ in the “one-to-one” session of the problem-solving process for more than one-hour through conversing with a student; and (iii) It supports immersive learning in order simulate the realistic scenarios and environments that give learners the opportunity to practice skills and interact with the simulated tutor. These chatbots acquired its intelligence through a hybrid approach that combines pattern-matching technique and machine learning algorithm in order to formulate its responses. The feedback from the students who used these chatbots and the effect of these chatbots on the students’ understanding of the subject matter were favourable as discussed in the paper.

Keywords: *chatbot, immersive learning, machine learning*